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# Geothermal Power Project

# Study of Environmental and Social Impact Terms of Reference

## Introduction

*<Field investigation works in the [country], description of conceptual geothermal models, exploratory drilling, objective of the proposed project, project components.>*

## Objective

The objective of the assignment is to undertake Environmental and Social Impact Assessment (ESIA) and respective report and an Environmental Management Plan (EMP) for the project.

## Scope of the Work

The Consultant shall undertake desk-top review of the available literature as well as conduct field work for verifying existing information and filling in the existing gaps. All potential impacts of the experimental drilling on the physical, biological, social, economic, and cultural environment should be explored. This would imply study of land tenure and land use patterns in the project area, and implication of the project implementation on the health, safety, livelihood, access to sources, and income of the affected population.

Consultations with the stakeholders (local governments, communities, authorities, representative of the potentially affected population, etc.) shall be undertaken as part of the ESIA process.

## Tasks and Responsibilities of Consultant

Task 1. Review of Background Information

The consultant will study environmental legislation of the [country] to identify those laws, regulations, norms and standards that apply to the use of underground resources in general, and to the exploration and use of geothermal resources in particular.

Review of scientific literature will be undertaken to compile information on the ecosystems, flora and fauna, geology, seismicity, climate and hydrology of the project area. This review should also be used to identify any gaps in the existing information, as well as the aged data that require verification. The scope and methodology of the required field work shall be worked out based on the above research.

Task 2. Field Work

The consultant will travel to the project sites to undertake field work required for obtaining full and detailed information on the biological environment, existing infrastructure, land tenure and use, and social aspects related to the project implementation.

Special attention should be given to studying potential sources of water supply to the experimental drilling site including their proximity, options of water extraction and transportation, hydrology of the natural water bodies intended for water supply, aquatic ecosystem and its sensitivity to water abstraction.

Another important sphere of field studies would be the potential location of work camp and alignment of access roads to the site and potential locations for waste disposal. Impact of roads construction and operation, as well as of the disposal of access material and other types of waste on the terrestrial ecosystem should be explored to see if any important habitats may be at risk. It will be important to clarify how the pollutants that may be generated through drilling (solid, liquid, and gas) may affect various sensitive receptors of the project area.

### Task 3. Development of ESIA report and EMP

The proposed outline of the ESIA report is attached to the present TOR (See Annex 1).

The main part of the ESIA report will be the analysis of expected impacts of the physical activities under the project and formulation of the measures for mitigating of the potential negative impacts.

More specifically, the ESIA will explore the impacts of (a) land use for various temporary and permanent structures required for drilling (including access road leading to drilling site, rig site, work camp); (b) water abstraction, transportation to the drilling site, and waste water discharge; (c) generation, temporary storage and final disposal of various types of waste (access material, drilling muds, geothermal brine, emissions); (d) temporary and permanent need for land use.

Mitigation measures should be aimed at avoiding and/or minimizing the project affected area; disruption of local population’s free movement, excess to their properties, and traditional use of natural resources; wildlife disturbance; damage to the aquatic ecosystem in the affected natural surface water bodies; pollution of air, water and soil; damage to human health though work-site accidents and exposure, as well as through long term health impacts for the local population.

EMP shall be provided in the format of tables of (i) environmental mitigation plan and (ii) environmental monitoring plan. The latter should provide measurable indicators for assessing how are the proposed mitigation measures being applied, and should include methodology for measuring these indicators. Cost estimates of the key distinct mitigation measures are required. Parties responsible for applying mitigation measures and for enforcing their application should also be named.

Because the experimental drilling stage is intended for well-informed decision-making on the investment into commercial use of geothermal resources of [city], the ESIA of experimental drilling will be expected to provide general outlook on the potential environmental and social implications of full-scale commercial use of these resources. However in difference from the detailed ESIA for the experimental drilling project, the overview of potential impacts of a possible commercial project would not be of a much generic nature.

## Deliverables and Reports

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| **Deliverable** | **Deadline** |
| Draft final ESIA and EMP | 35 days after contract signing |
| Final ESIA and EMP addressing comments of the [partner] and the [donor]. | 50 days after contract signing |

## Annex 1

EXECUTIVE SUMMARY (Not more than 10 pages)

Introduction

Technical, Environmental and Social Standards and Regulations

Environmental and Social Screening

Public Participation

Sensitive Environmental and Social Receptors and Potential Impacts

Project Alternatives

Project Description

Environmental and Social Impact Assessment Methodology

Environmental and Social Baseline

Expected Impacts and Mitigation

Environmental Management Plan

Outline of possible impacts of a future commercial operation

CHAPTER 1. Introduction

CHAPTER 2. Legal and Policy Framework

CHAPTER 3. Technical, Environmental and Social Standards and Regulations

CHAPTER 4. Environmental and Social Screening

CHAPTER 5. Physical and Natural Environment

CHAPTER 6. Sensitive Receptors and Potential Impacts

CHAPTER 7. Impact Mitigation

CHAPTER 8. Environmental Management Plan

Annex 1 Environmental Management Matrix

Annex 2. Public Consultation

Annex 3. References

Annex 4. Maps, Graphs, Pictures